



California Morbidity

An Enhanced Laboratory-Based Surveillance System for *Cryptosporidium* Infection

In response to concerns about waterborne transmission of *Cryptosporidium*, the California Department of Health Services' (CDHS) Division of Drinking Water and Environmental Management called for a cooperative venture to be undertaken by water systems, the CDHS, and the local health departments of the San Francisco Bay Area. This venture is to pilot an enhanced laboratory-based surveillance system for cryptosporidiosis. By this effort, collaborating agencies hope to achieve the following:

- enhance reporting of human cases of cryptosporidiosis;
- monitor trends over time; and
- detect any increases in the number of reported cases or outbreaks early enough to allow early investigation and possible intervention.

In June 1996, the pilot surveillance system was added to the California Emerging Infections Program (CEIP) which conducts surveillance on selected emerging infectious diseases in the San Francisco Bay Area. CEIP is a collaborative effort of the CDHS' Division of Communicable Disease Control and the University of California at Berkeley, School of Public Health, in cooperation with the Centers for Disease Control and Prevention (CDC). CDC and the 52 water systems participating in this cooperative venture share funding of this surveillance system. Initially, information was collected directly from most of the clinical laboratories that test for cryptosporidiosis in Alameda, Contra Costa, and San Francisco Counties, and from a limited number of laboratories in Marin, San Mateo, Santa Clara, Solano, and Sonoma Counties. Of note, San Francisco County had previously instituted laboratory-based surveillance for cryptosporidiosis for several years as part of their AIDS surveillance program before this project began. In June 1997, the program was expanded to include most laboratories in Marin, San Mateo, Santa Clara, Solano, and Sonoma Counties to cover a total of eight Bay Area counties comprising a population of approximately six million.

This enhanced disease surveillance system will complement the comprehensive implementation of the California *Cryptosporidium* Action Plan by the public water supply systems in conjunction with the requirement for *Cryptosporidium* monitoring in the federal Information Collection Rule (ICR). The ICR is a federally implemented regulation requiring short-term monitoring of *Cryptosporidium* and *Giardia*, as well as a number of chemical disinfection by-products, with the intent of collecting information on the occurrence of these pathogens and chemicals in public drinking water. In addition, this program should aid in the early detection and possible intervention of outbreaks of cryptosporidiosis, if they occur in the area covered by the program.

In the eight counties included in this surveillance project, a total of 298 reported cases of cryptosporidiosis were documented between June 1996 and May 1998. In the City and County of San Francisco alone, comparison of data from previous years was possible: the number of reported cryptosporidiosis cases in San Francisco actually declined since this project began, from a previous average of greater than 100 cases per year reported to 73 in 1996 and 47 in 1997. This may be due, in part, to improved multi-drug treatment of HIV disease. In the other seven counties, valid comparison of data from previous years is not possible due to changes in surveillance procedures. Although the number of cases reported from the seven other counties these past two years is higher than in previous years, this probably reflects better reporting during this pilot surveillance project. The observed fluctuations in reported cases during this period, however, give no evidence of any outbreak. The following tables provide detailed findings of this surveillance project during the first two years:

1. Number of Reported Cases of Cryptosporidiosis

YEAR 1 (6/96-5/97)														
County	Population*	Jun-96	Jul-96	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	TOTAL
Alameda	1,356,100	2	0	2	1	0	1	0	3	1	2	1	0	13
Contra Costa	870,700	1	1	1	2	0	0	0	0	0	0	0	2	7
San Francisco	755,300	7	3	5	6	4	4	5	10	10	9	5	5	73
(Subtotal)	(2,982,100)	(10)	(4)	(8)	(9)	(4)	(5)	(5)	(13)	(11)	(11)	(6)	(7)	(93)
Marin***		0	1	0	0	1	0	0	0	0	2	3	1	8
San Mateo ***		0	0	1	1	1	1	0	0	0	0	1	1	6
Santa Clara ***		0	0	6	1	4	1	1	0	2	1	1	2	19
Solano ***		0	0	0	2	1	0	0	0	0	1	1	0	5
Sonoma ***		2	0	0	0	0	1	0	2	0	0	2	5	12
8-County Total		12	5	15	13	11	8	6	15	13	15	14	16	143
YEAR 2 (6/97-5/98)														
County	Population*	Jun-97	Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97	Jan-98	Feb-98	Mar-98	Apr-98	May-98	TOTAL
Alameda	1,398,500	3	3	1	1	2	3	2	3	3	6	1	1	29
Contra Costa	896,200	1	1	3	2	1	1	1	1	1	1	0	1	14
San Francisco	777,400	6	5	4	3	1	4	1	3	4	2	6	8	47
(Subtotal)	(3,072,100)	(10)	(9)	(8)	(6)	(4)	(8)	(4)	(7)	(8)	(9)	(7)	(10)	(90)
Marin **	243,300	2	0	1	1	0	0	0	1	1	1	2	1	10
San Mateo **	711,700	0	0	0	0	3	0	2	1	0	1	1	0	8
Santa Clara **	1,671,400	2	0	0	4	3	2	2	1	1	3	0	0	18
Solano **	378,600	1	1	1	2	1	2	1	0	1	4	0	0	14
Sonoma **	432,800	2	0	0	2	3	1	0	3	3	0	0	1	15
8-County Total	6,509,900	17	10	10	15	14	13	9	13	14	18	10	12	155

***Sentinel surveillance in effect from June 1996 to May 1997: each of these counties represented by a sample of 4 to 10 laboratories.

**Population based surveillance as of June 1, 1997.

*Population data, July 1997 estimate, CA Department of Finance.

2. Reported Incidence Rates of Laboratory-detected Cases of Cryptosporidiosis

The reported incidence rates were calculated for the two years of surveillance for *cryptosporidiosis*. For the first year (year 1), incidence rates were calculated only for the three counties (Alameda, Contra Costa, and San Francisco) where population-based surveillance was conducted.

a. Year 1* (6/1/96 – 5/31/97) Reported Incidence Rates

Alameda County	1.0 cases per 100,000 persons per year
Contra Costa County	0.8 cases per 100,000 persons per year
San Francisco County	9.7 cases per 100,000 persons per year

*For the remaining five counties sentinel surveillance was in place during year 1. This limits the calculation of an incidence rate for these counties.

b. Year 2 (6/1/97 – 5/31/98) Reported Incidence Rates

Alameda County	2.0 cases per 100,000 persons per year
Contra Costa County	1.6 cases per 100,000 persons per year
San Francisco County	6.0 cases per 100,000 persons per year
Marin County	4.1 cases per 100,000 persons per year
San Mateo County	1.1 cases per 100,000 persons per year
Santa Clara County	1.1 cases per 100,000 persons per year
Solano County	3.7 cases per 100,000 persons per year
Sonoma County	3.5 cases per 100,000 persons per year

3. Sex and Age of Patients with Cryptosporidiosis

In year 1 (06/01/96-05/31/97), 81.1% of patients were male, while in year 2 (06/01/97-05/31/98), 56.8% of patients were male. In year 1 (6/1/96-5/31/97), the median age of patients was 35 years (range: 1 to 66 years), while in year 2 (6/1/97-5/31/98), the median age was 34 years (range: 1 to 89 years).

Public Water Systems Participating in the Bay Area Cryptosporidiosis Surveillance Project

San Francisco County San Francisco PUC	Alameda County East Bay MUD Alameda County Water District* City of Hayward*	Contra Costa County City of Antioch So. Calif. Water Co.- Bay Point Contra Costa WD City of Martinez Diablo WD
San Mateo County Belmont CWD* City of Brisbane* City of Burlingame* Los Trancos CWD* GVMID* Calif. Water Service (CWS)- Menlo Park* CWS- San Carlos* CWS - San Mateo* CWS - So. SF* Coastside CWD* Daly City* Skyline CWD* City of Hillsborough* City of Menlo Park* City of Millbrae* Estero MID* Redwood City* San Bruno* East Palo Alto* North Coast CWD* Westborough*	Marin County Marin MWD North Marin WD** Sonoma County Sonoma County Water Agency** Solano County City of Benicia City of Fairfield City of Vacaville City of Vallejo Solano Irrigation Dist. - Susuin Solano County Water Agency****	Santa Clara County Santa Clara Valley WD*** Purissima Hills CWD* Milpitas* City of San Jose* Mountain View* Sunnyvale* Santa Clara* Palo Alto* Stanford* San Jose Water Co.*** City of Cupertino*** CWS - Los Altos*** *** Santa Clara Valley WD serves as main contract for all Santa Clara systems not under BAWUA. **** Solano County Water Agency, not a LPWS, serves as main contract for all LPWS in Solano County.

Reported by: Division of Drinking Water and Environmental Management, Drinking Water Field Operations Branch, and the Division of Communicable Disease Control, Disease Investigations and Surveillance Branch, of the California Department of Health Services, the California Emerging Infections Program, and the participating water utilities in the San Francisco Bay Area.